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The removal of uranium and thorium from their aqueous solutions via glauconite

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ABSTRACT

The sorption behavior of uranium and thorium from their aqueous solutions by local Egyptian Bahariya oases glauconite has been investigated by the batch technique. The parameters that affect the sorption of uranium and thorium on glauconite such as pH, contact time, their initial concentration, glauconite mass, and temperature have been studied. Sorption experiments were expressed by Langmuir and Freundlich isotherms and the results demonstrated that the sorption of uranium and thorium on glauconite correlated well with Freundlich isotherm. Kinetics studies showed that the sorption followed pseudo–first-order kinetic model with an activation energy (E_a) of 8.8 kJ/mol. Thermodynamic parameters such as ΔH°, ΔS°, and ΔG° indicated that the sorption of uranium and thorium on glauconite was endothermic.

Keywords: Sorption; Uranium; Thorium; Glauconite; Uptake

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